

USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

Enhanced Preliminary Assessment Report:

Monroeville Army Housing Units
Monroeville, Pennsylvania

October 1989

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Commander
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Aberdeen Proving Ground, Maryland 21010-5401

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<p>Argonne National Laboratory has conducted an enhanced preliminary assessment of the Army housing property located in Monroeville, PA. The objectives of this assessment include identifying and characterizing all environmentally significant operations, identifying areas of environmental contamination that may require immediate remedial actions, identifying other actions which may be necessary to resolve all identified environmental problems, and identifying other environmental concerns that may present impediments to the expeditious sale of this property.</p>				
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SUMMARY

The Monroeville housing area in Monroeville, Pa., does not represent an imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. There are no known environmental impacts from this property, and during site investigation none were identified.

This housing area was originally developed to support a Nike missile battery. No missile-related wastes were delivered to the area for management or disposal, and the area also remained independent of the battery's missile operations with respect to water and electrical utilities. Sewage from the battery's nearby fire-control area, however, was delivered by sewer to the housing area for treatment. There is no documentation suggesting that anything but domestic sewage was ever discharged from the fire-control area to the housing area's sewage-treatment facility.

There are no known asbestos-containing materials used in the construction of these units other than asphalt floor tile, which may contain asbestos. Also, there are no known polychlorinated biphenyls (PCBs) associated with the property being excessed. It is not known whether the pole-mounted transformer that services the housing site has been tested for the presence of PCBs, but that transformer is the property of the utility company.

The Allegheny County Health Department cited the Monroeville family housing area in February 1989 for sewage problems at its treatment facility. An upgraded sewage treatment facility was scheduled to be completed in June 1989; however, the facility is still not operational because of incorrect valve operation and other uncompleted work. Weed growth and septic conditions therefore persist at the facility's sand pits and must be corrected. In its present condition the sewage treatment facility has the potential for adverse environmental impact and may constitute a public health threat.

The following actions are recommended prior to release of this property:

- Complete the upgrading of the sewage treatment facility to make it operable.
- Sample sand filter media, soil, and water in the vicinity of the sewage-treatment plant to determine the plant's environmental impact and the presence or absence of missile-related contaminants.
- Verify that the sewer line that once connected the housing area's treatment facility with the adjacent IFC area has been properly abandoned and sealed.
- Sample backfilled soils around the abandoned sewer line to verify the absence of missile-related contamination.

These recommendations assume that this property will most likely continue to be used for residential housing.

1 INTRODUCTION

In October 1988, Congress passed the Defense Authorization Amendments and Base Closure and Realignment Act, Public Law 100-526. This legislation provided the framework for making decisions about military base closures and realignments. The overall objective of the legislation is to close and realign bases so as to maximize savings without impairing the Army's overall military mission. In December 1988, the Defense Secretary's ad hoc Commission on Base Realignment and Closure issued its final report nominating candidate installations. The Commission's recommendations, subsequently approved by Congress, affect 111 Army installations, of which 81 are to be closed. Among the affected installations are 53 military housing areas, including the Monroeville housing area addressed in this preliminary assessment.¹

Legislative directives require that all base closures and realignments be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA). As a result, NEPA documentation is being prepared for all properties scheduled to be closed or realigned. The newly formed Base Closure Division of the U.S. Army Toxic and Hazardous Materials Agency is responsible for supervising the preliminary assessment effort for all affected properties. These USATHAMA assessments will subsequently be incorporated into the NEPA documentation being prepared for the properties.

This document is a report of the enhanced preliminary assessment (PA) conducted by Argonne National Laboratory (ANL) at the Army stand-alone housing area in Monroeville, Pa.

1.1 AUTHORITY FOR THE PA

The USATHAMA has engaged ANL to support the Base Closure Program and assess the environmental quality of the installations proposed for closure or realignment. Preliminary assessments are being conducted under the authority of the Defense Department's Installation Restoration Program (IRP); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 91-510, also known as Superfund; the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499; and the Defense Authorization Amendments and Base Closure and Realignment Act of 1988, Public Law 100-526.

In conducting preliminary assessments, ANL has followed the methodologies and procedures outlined in Phase I of the IRP. Consequently, this PA addresses all documented or suspected incidents of actual or potential release of hazardous or toxic constituents to the environment.

In addition, this PA is "enhanced" to cover topics not normally addressed in a Phase I preliminary assessment. Specifically, this assessment considers and evaluates the following topical areas and issues:

- Status with respect to regulatory compliance,
- Asbestos,
- Polychlorinated biphenyls (PCBs),
- Radon hazards (to be assessed and reported on independently),
- Underground storage tanks,
- Current or potential restraints on facility utilization,
- Environmental issues requiring resolution,
- Health-risk perspectives associated with continued residential land use, and
- Other environmental concerns that might present impediments to the expeditious "excessing," or transfer and/or release, of federally owned property.

1.2 OBJECTIVES

This enhanced PA is based on existing information from Army housing records of initial property acquisition, initial construction, and major renovations and remodeling performed by local contractors or by the Army Corps of Engineers. The PA effort does not include the generation of new data. The objectives of the PA include:

- Identifying and characterizing all environmentally significant operations (ESOs),
- Identifying property areas or ESOs that may require a site investigation,
- Identifying ESOs or areas of environmental contamination that may require immediate remedial action,
- Identifying other actions that may be necessary to address and resolve all identified environmental problems, and
- Identifying other environmental concerns that may present impediments to the expeditious transfer of this property.

1.3 PROCEDURES

The PA began with a review of Army Housing records located at the Charles E. Kelly Support Facility, DEH Office Building No. S-630052, during the week of July 17, 1989. A site visit at the Monroeville housing area was conducted on July 17 to obtain additional information through direct observation and interviews with personnel familiar with the property and its operations and history. Contact was made with the senior tenant at this property prior to the visit, and arrangements were made to inspect the interior of one of the housing units. Where possible, these inspections were conducted on unoccupied units. In addition, ANL investigators revisited the property on September 13, 1989, at which time the interiors of all the units were inspected. Photographs were taken of the housing units and surrounding properties as a means of documenting the condition of the housing units and immediate land uses. Site photographs are appended.

All available information was evaluated with respect to actual or potential releases to air, soil, and surface and ground waters.

2 PROPERTY CHARACTERIZATION

2.1 GENERAL PROPERTY INFORMATION

The Monroeville family housing area is located in Allegheny County on the eastern edge of the city of Monroeville, Pennsylvania.

The housing units were constructed in 1958 in support of the Monroeville Nike battery. The integrated fire control (IFC) area of the battery was located adjacent to this housing area, to the northeast. During the operational period of this battery, sewage from the IFC was delivered to the housing area by underground sewer and treated in the area's treatment facility. The IFC has been sold and all buildings razed. Sewer connections are believed to have been abandoned in place. No additional major construction has taken place on the property since that time. The Charles E. Kelly Support Facility, DEH, located in Oakdale, Pa., is responsible for any major renovations or upgrading at the facility.

Figures 1 and 2 show the general location of the facility.

2.2 DESCRIPTION OF FACILITY

Figure 3 presents the site plan of the housing property.

Housing Units

The housing area occupies a 10.71-acre land parcel and consists of 12 units used by military personnel and their dependents.²

The units were constructed by the Army in 1958. All units have concrete and masonry block foundations, with asphalt floor tile overlaying the foundation. Original outside construction was of wood frame covered with vertical wood siding that was later covered with vinyl siding. The roofing is of the built-up gravel type of construction (tar and pea gravel).³ Each unit has an exterior storage building, two garbage receptacles, and a paved terrace. The housing area contains one three-bedroom home with an area of 1,978 square feet; two two-bedroom homes, each with 1,605 square feet; three two-bedroom homes, each with 1,499 square feet; and six three-bedroom homes, each with 1,588 square feet.⁴

All units have separate natural gas forced-air heating facilities that are adequate for the climatic conditions in the area. A triangular shaped play area is located along Lindsey Lane for the children who live in the Monroeville housing units. This area is approximately 5,280 square feet and is equipped with playground equipment such as slides, merry-go-rounds, jungle gyms, and swings. A bus-stop waiting shelter for school children is located at the intersection of New Texas Road and Lindsey Lane.

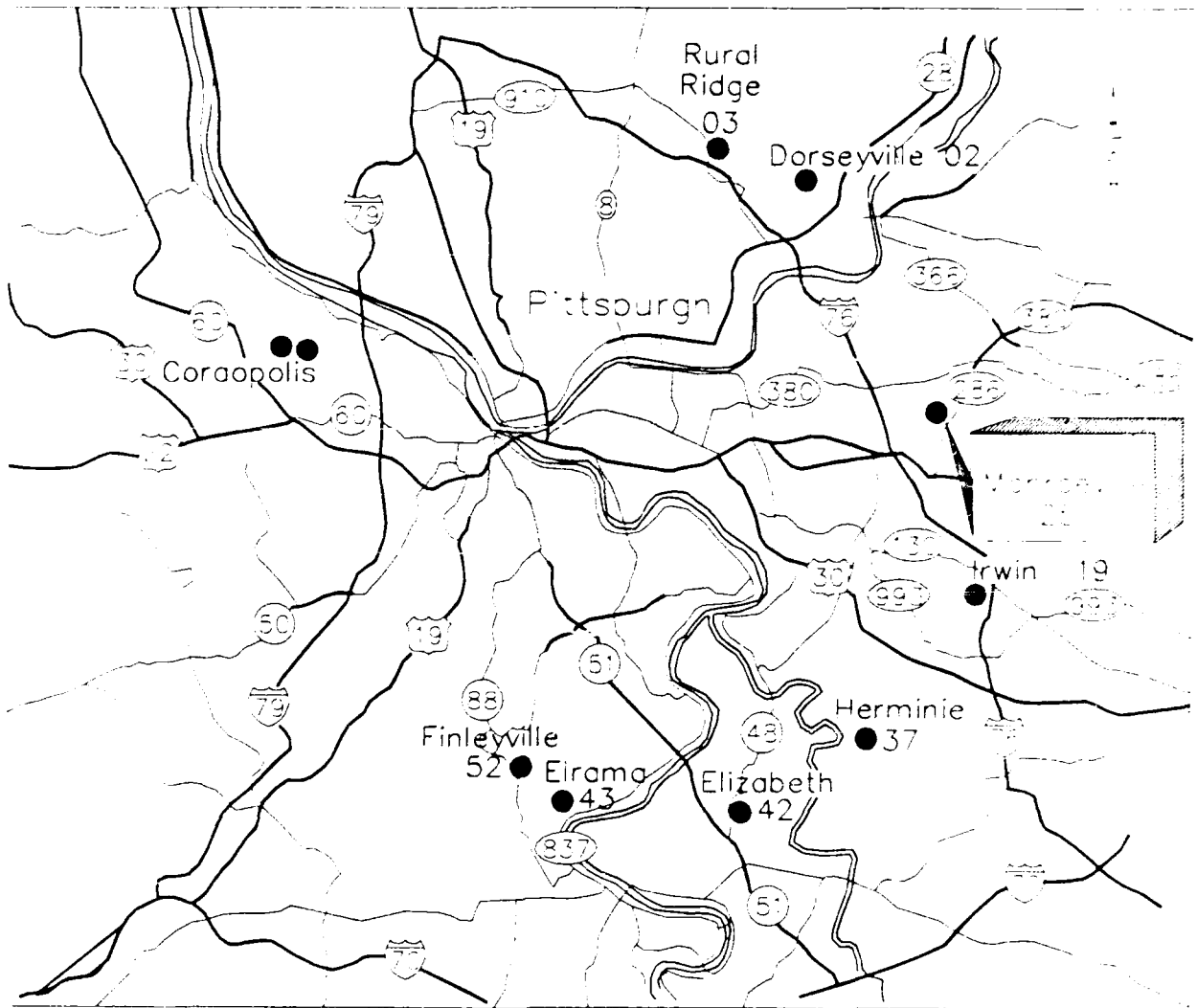


FIGURE 1 Location Map of Pennsylvania Army Housing Facilities

The general public has access to the property; however, security measures are enforced at the sewage treatment facility with a chain link fence surrounding the area and a locked gate at the entrance.

Utilities

Electricity for the Monroeville family housing site is furnished by the Duquesne Light Company; water has been furnished by the Plum Boro Municipal Authority; natural gas by Peoples Gas Company of Pittsburgh, Pa.;⁵ and refuse pickup by R.J. Liberto, a private contractor.⁶

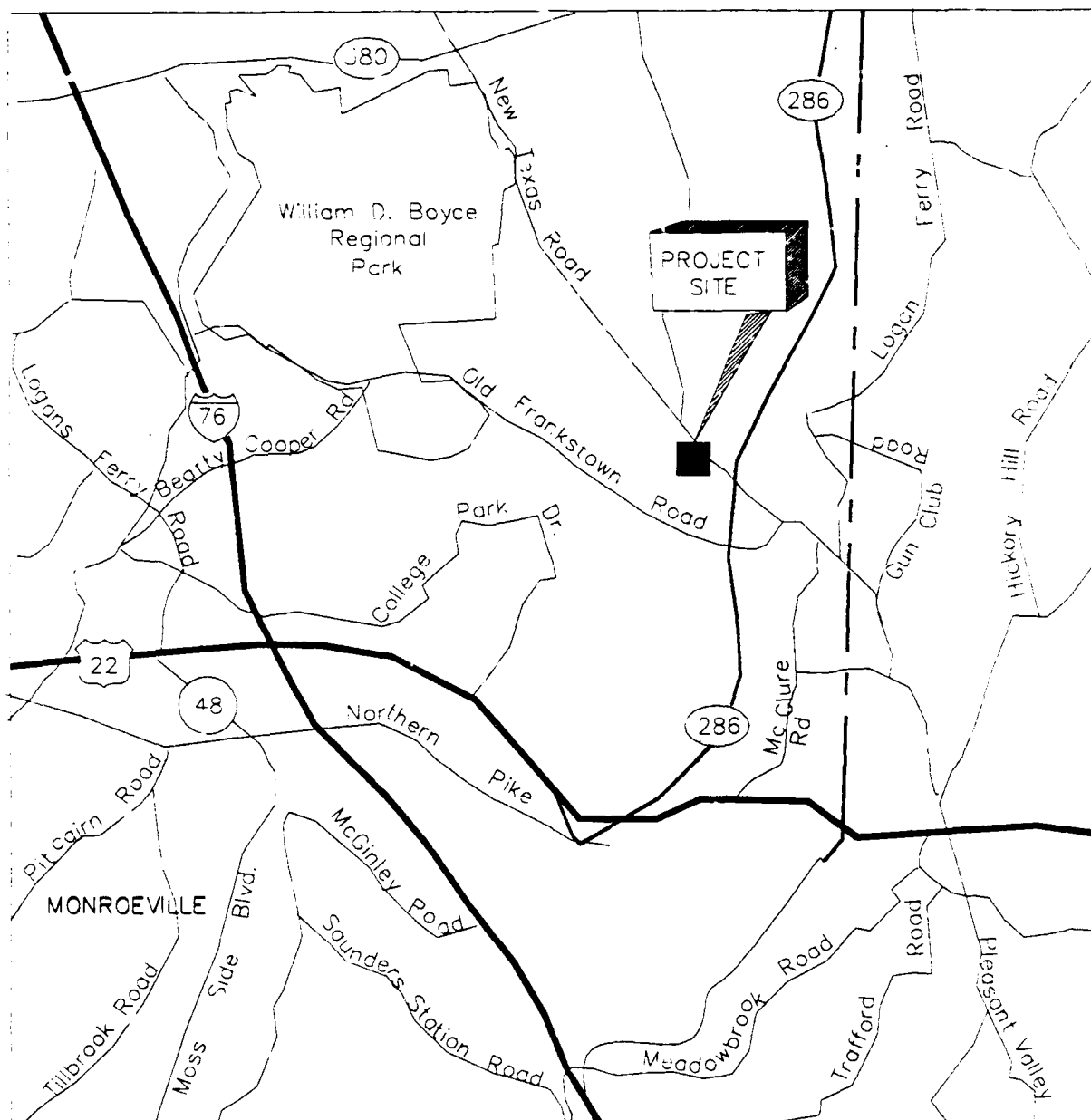


FIGURE 2 Vicinity Map of Monroeville Army Housing Units

Sewage

The Monroeville family housing site has its own sand-filter sewage-treatment facility, which is maintained and operated for the Army by a local contractor. The sewage treatment plant consists of two parallel sand filters. Half of the plant was completely upgraded early in 1989. However, some work is not yet completed. Specifically, the valving that allows diversion of sewage from one sand filter to the other has not yet been repaired. As a result, sewage cannot be directed to the newly renovated

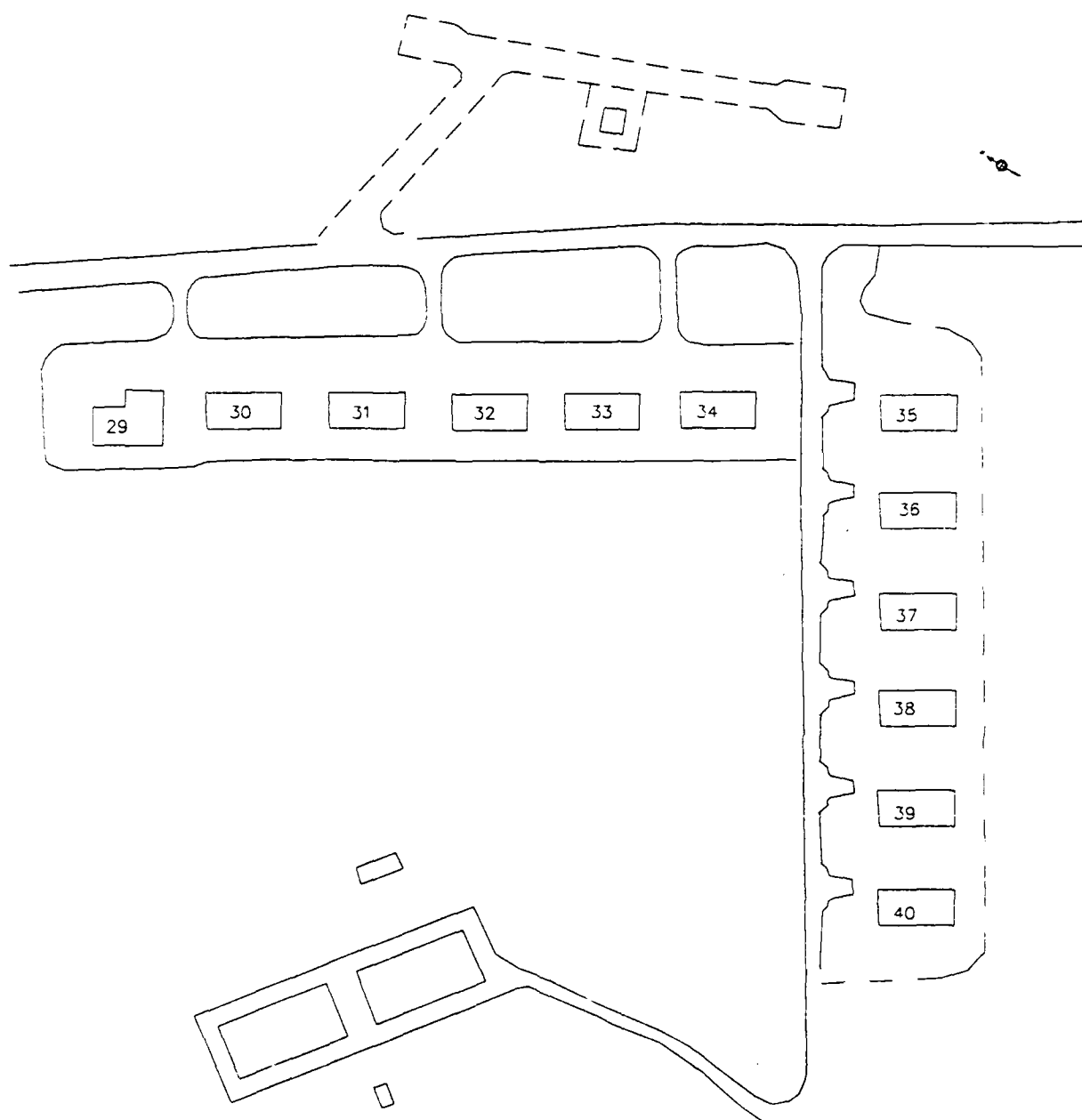


FIGURE 3 Site Plan Map of Monroeville Army Housing Units

sand filter. Septic conditions still exist in the old sand-filter beds, which prevents use of the renovated sand filters. The old bed is overgrown with brush and weeds.

Storm Drainage System

The storm drainage for the housing units is of the common type of open-ground ditches and surface runoff.

Other Permanent Structures or Property Improvements

Other permanent structures and major property improvements include the sand filter sewage treatment facility, the children's playground along Lindsey Lane, and a bus passenger waiting shelter at New Texas Road and Lindsey Lane.

2.3 PROPERTY HISTORY

2.3.1 Nike Defense Program and Typical Battery-Level Practices

Generic information on the national Nike antiaircraft defense program has been compiled in two studies, one commissioned by the Army Corps of Engineers⁷ and the other by the U.S. Army Toxic and Hazardous Materials Agency.⁸ In both studies, independent contractors relied on information contained in unclassified documents related to the Nike surface-to-air missile program, including engineering drawings and specifications (for the facilities and the missiles themselves), interviews with Army personnel participating in the Nike program, and operations manuals and directives relating to the operations and maintenance of Nike facilities. Taken together, these two reports represent the most complete assemblage of generic information on the Nike missile program from an environmental perspective. Salient points from both reports are condensed below.

At its zenith in the early 1960s, the Nike program included 291 batteries located throughout the continental United States. The program was completely phased out by 1976, with many of the properties sold to private concerns or excessed to state or local governments for nominal fees.

Nike Ajax missiles were first deployed in 1954 at installations throughout the continental United States, replacing, or in some cases augmenting, conventional artillery batteries and providing protection from aerial attack for strategic resources and population centers. Typically, Nike batteries were located in rural areas encircling the protected area. The Ajax was a two-stage missile using a solid-fuel booster rocket and a liquid-fuel sustainer motor to deliver a warhead to airborne targets.

The Ajax missile was gradually replaced by the Nike Hercules missile, introduced in 1958. Like the Ajax, the Hercules was a two-stage missile, but it differed from the Ajax in that its second stage was a solid-fuel rather than liquid-fuel power source and its payload often was a nuclear rather than conventional warhead. Ajax-to-Hercules

conversions occurred between 1958 and 1961 and required little change in existing Nike battery facilities. A third-generation missile, the Zeus, was phased out during development and consequently was never deployed.

A typical Nike missile battery consisted of two distinct and separate operating units, the launch operations and the integrated fire control (IFC) operations. The two operating areas were separated by distances of less than two miles, with lines of sight between them for communications purposes. A third separate area was also sometimes part of the battery. This area was typically equidistant from the two battery operating sites and contained housing for married personnel assigned to the battery. Occasionally, these housing areas also contained battalion headquarters, which were responsible for a number of Nike batteries.

Depending on area characteristics and convenience, the housing areas were often reliant on the launch or IFC sites for utilities such as potable water, electrical power, and sewage treatment. In those instances, buried utility lines connected the housing area to one or both of the other battery properties. It is also possible, however, that housing areas were completely independent of the missile launcher and tracking operations. In those instances, the necessary utilities were either maintained on the housing site or purchased from the local community. In many localities, as the character of the land area around the housing units changed from rural to suburban or urban, communities extended utility services to the housing unit locations, in which case conversions from independent systems to community systems were made.

A large variety of wastes was associated with the operation and maintenance of Nike missile batteries. Normally encountered wastes included benzene, carbon tetrachloride, chromium and lead (contained in paints and protective coatings), petroleum hydrocarbons, perchloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and trichloroethylene. Because of the rural locations of these batteries, and also because very few regulatory controls existed at that time, most of these wastes were managed "on-site." (Unused rocket propellants and explosives, however, would always have been returned to central supply depots and not disposed of on-site.) It is further conceivable that wastes generated at one of the Nike properties may have been transferred to its companion property for management or disposal.

Wastes related to missile operation and maintenance would not have been purposely transferred from a battery operating area to a housing area with no facilities for waste management or disposal. In some instances, however, the sewage treatment facilities for all Nike battery properties were located at the housing area; that possibility cannot be automatically ignored. Finally, where housing areas received various utilities from either of the operating areas, it is also possible that wastes disposed of on those other properties may have migrated to the housing area via the buried utility lines. And since decommissioning of the Nike batteries did not normally involve removal of buried utility or communication lines, any such contaminant migration is likely to have gone unnoticed.

2.3.2 Monroeville Housing Units

The Monroeville housing area was constructed in 1958 to supply stand-alone housing for military personnel assigned to the Monroeville Nike site and their dependents. Twelve single-family housing units were constructed on a 10.71-acre parcel of land.

The site has been used as a housing area for active duty U.S. military families in the greater Pittsburgh area since the missile sites were deactivated in the early 1970s.

Six of the housing units face northeast, fronting on New Texas Road; the other six face northwest, fronting on Lindsey Lane. All the Monroeville housing units are built on foundations made of concrete and masonry block with asphalt flooring overlaying the concrete block. Original outside construction was of wood frame covered with vertical wood siding. The siding was then covered with vinyl siding at a later date (unknown). The roofing is of the built-up gravel type of construction (tar and pea gravel). Natural gas for indirect heating has been supplied to this property since the time of its initial construction.

Since the initial property development in 1958, a children's playground, and bus passenger shelter have been added. None of the original structures has been razed. However, renovations include the upgrading of one-half of the existing sewage-treatment facility, which at one time also provided sewage treatment for the Nike battery's adjacent IFC area. The IFC site has since been sold and the buildings razed. There is no documentation detailing the decommissioning of the sewage line that led from the IFC to the housing area's treatment plant. This upgrading of the sewage treatment facility took place early in 1989.

2.4 ENVIRONMENTAL SETTING AND SURROUNDING LAND USE

The population of Monroeville is 30,977; that of Pennsylvania, 11,864,751; and that of Allegheny County is 1,450,085 (1980 census).

The family housing units are located on terrain consisting of gently rolling to steep slopes along areas of gullies and streams on the far eastern edge of the town of Monroeville at the intersection of New Texas Road and Lindsey Lane. Some agriculture is carried out in the area that surrounds the housing site.

In 1980, the land-use pattern in the Allegheny River Basin was as follows: 6% urban, 15% crop land, 5% pasture land, 60% forest, and 14% other (including surface mining).⁹ By the year 2020, it is estimated that land-use distribution will be: 10% urban, 14% cropland, 2% pasture land, 65% forest, and 9% other. Thirty-seven percent of the forest land is being commercially harvested. Urban expansions are expected to occur at the expense of farm land. The area surrounding Monroeville, being only 10 miles east of Pittsburgh, is expected to absorb some of the anticipated urban expansions within the Allegheny Basin.

Land use within the immediate Monroeville area is primarily rural, pasture, or forest. However, Monroeville lies adjacent to the industrialized area of the city of Pittsburgh. This area extends east from Pittsburgh. Additional industrial expansions around Pittsburgh, therefore, may also involve the Monroeville vicinity.

The entire Allegheny Basin was at one time a forest; now, only 65% of it is forest. Major tree species include white pine, hemlock, oak, hickory, elm, ash, red maple, beech, birch, and aspen.

The main farm crops in Allegheny County are corn, oats, wheat, sweet corn, tomatoes, and apples. Most soils within the county, however, are only marginally acceptable for such crop applications and require the regular addition of fertilizer and lime for acceptable yields. Rotating land use between row crops and pasture is a common practice, both to maintain the productivity of the soil and control erosion. Other erosion-control practices include terrace farming, diversion of runoff, installation of field tiles, and the use of grassed waterways for drainage.

2.5 GEOLOGIC AND HYDROLOGIC SETTINGS

The Monroeville housing area lies within the Appalachian Plateaus Physiographic Province.¹⁰ Rock types are primarily sandstones and shales that contain thin beds of coal. The rocks are divided into 10 stratigraphic units. From youngest to oldest, these units are the Dunkard Group of Permian and Pennsylvanian age; the Monongahela, Conemaugh, and Allegheny groups, and the Kanawha Formation of Pennsylvanian age; the Greenbrier Limestone and Pocono Group of Mississippian age; and the Hampshire, Chemung, and Brallier Formations of Devonian age. Coal beds are numerous in the Pennsylvanian system. The Allegheny and Monongahela groups have 12 feet and 3 feet, respectively, of workable coal. The Conemaugh Group has only thin beds of coal that are generally not workable. The Pennsylvanian system accounts for approximately 75% of the rock units present in the Monroeville geographic area.

Soils in the Monongahela River Basin are grouped into 35 associations composed of combinations of 31 major soils. Soils in the Monroeville area are composed mainly of the Guernesey-Culleoka association and are formed in unconsolidated water-sorted alluvial materials. Soil pH values range from highly acidic to neutral. Terrain slopes range from 3 to 35%. Soil thicknesses on hillsides average between 4 and 5 feet.

Quaternary deposits consist of alluvium, which overlies bedrocks in most places along stream valleys. The alluvium is generally permeable and, when saturated, yields moderate to large supplies of water. Groundwater in bedrock occurs largely in secondary openings such as joint planes or solution openings. The Conemaugh Group crops out in the extreme northern part of the county and along some stream valleys and is the source of moderate supplies of groundwater.

The Monongahela River and its tributaries cut valleys below the water table of the interstream areas. Under this condition, the aquifers discharge on the slopes of the valleys in the form of hillside springs and seeps. Conversely, during high stream flow conditions, surface streams will recharge aquifers.

Surface water flow characteristics within the Monongahela Basin are largely the result of topographic features. Average annual runoff in Subbasin 19 ranges from 14 to 28 inches and is primarily influenced by precipitation distribution; however, land use, land cover, and geologic factors also exert some influence.¹¹ Flows in most valley streams are seasonably variable. Most streams are found in the valley floors, although, under certain hydrologic conditions, groundwater will discharge to the surface by means of hillside streams and seeps.

3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS

3.1 ASBESTOS CONSTRUCTION MATERIALS

There is no documentation as to whether asbestos-containing materials were used in the original construction of the housing units or asbestos material was added at some later date as construction material. No insulation was observed on the water pipes of the units. Asphalt floor tiles that may contain asbestos were all in good condition.

3.2 SEWAGE TREATMENT FACILITY

Currently, the newly upgraded sewage treatment facility is not operating properly. Because of an oversight relating to valve operation and other uncompleted work, the newly renovated sand filters cannot be put on line, and sewage continues to be inadequately treated in the old malfunctioning sand filters.

4 KNOWN AND SUSPECTED RELEASES

No major releases or impacts on the environment have occurred at the Monroeville housing area. No hazardous wastes or hazardous materials are stored on site. The housing area included in this PA is not believed to have ever been involved in Nike operational activities, although sewage from the adjacent former IFC area of the battery was delivered to the treatment facility by underground sewer during the battery's operational period.

The Monroeville area is a 10.71-acre site developed in 1958 for U.S. Army personnel assigned the Monroeville Nike battery. The site has been used by active-duty military personnel in the greater Pittsburgh area since the missile battery was deactivated in the early 1970s. It has always been used as housing units for military personnel, with no industrial activities occurring on site.

5 PRELIMINARY ASSESSMENT CONCLUSIONS

Although these housing units were originally developed in support of a Nike missile battery that was located near Monroeville, Pa., there is no record of wastes associated with the operation or maintenance of the battery ever being delivered to or managed at this housing property. Domestic sewage generated at the IFC area was treated at the housing area's treatment facility. However, there is no record of Nike missile-related wastes ever being discharged to the housing area's treatment facility. The housing facility was completely independent of the battery's launch and fire-control operations with respect to water and electrical utilities. No documentary evidence was found of utility connections between this housing site and other properties composing the Monroeville Nike missile battery.

The Allegheny County Health Department cited the Monroeville family housing units in February 1989 for sewage problems at the housing site's sanitary treatment facility.¹² An upgrading of the sewage-treatment facility was completed in June 1989; however, the facility is still not functioning properly because of incorrect valve positioning and other uncompleted or overlooked work at the facility. Weed growth and septic conditions still persist in the sand filter beds at the facility and must be corrected. This situation may constitute a public health threat.

6 RECOMMENDATIONS

The Monroeville family housing area represents no imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. No immediate remedial action, therefore, is warranted for the site. Nevertheless, an environmental impact has been identified from the sewage treatment facility at this property, which may warrant some ultimate remedial action.

Soil and water sampling should be carried out at the sewage treatment facility to determine environmental impact before this property is sold. Furthermore, this sampling should be designed and conducted in such a way so as to guarantee the absence of Nike missile-related contaminants that could have been previously discharged to the facility from the nearby IFC area. It is further recommended that corrections to the treatment facility to resolve operating problems be made.

The abandoned sewer line that once connected this treatment facility with the IFC area needs to be further investigated. These investigations should verify that the line was properly abandoned and that no Nike missile-related contaminants have migrated along this line from the IFC area.

These recommendations assume that this property will most likely continue to be used for residential housing.

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APPENDIX:
PHOTOGRAPHS OF MONROEVILLE HOUSING FACILITY
AND SURROUNDING LAND

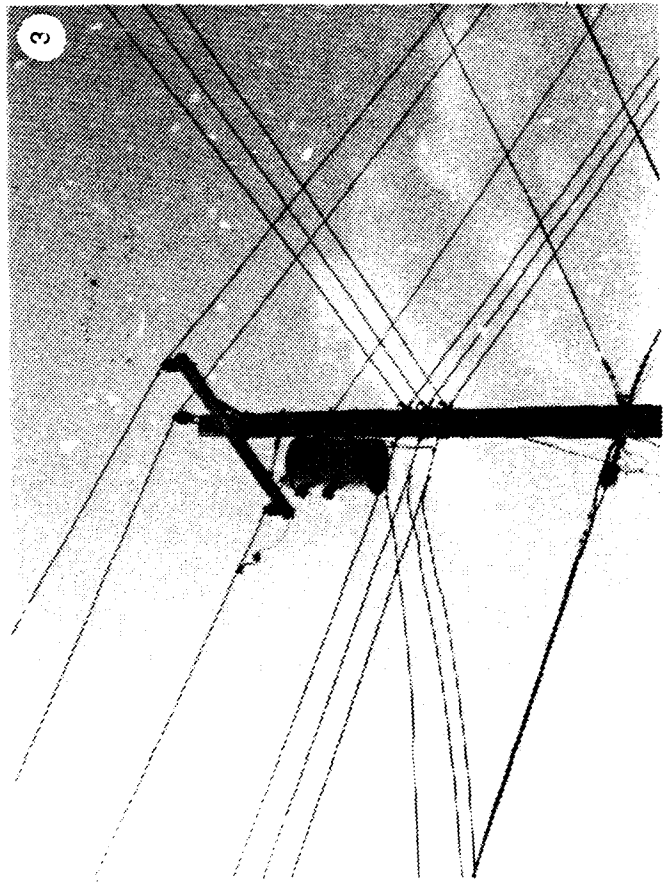
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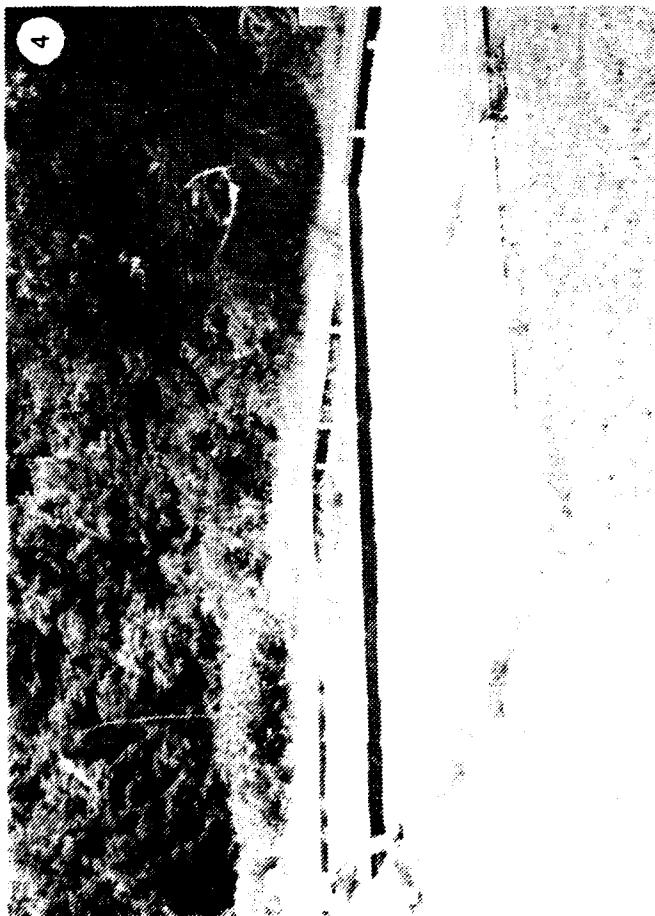


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IDENTIFICATIONS OF PHOTOGRAPHS

1. A row of houses on Lindsey Lane.
2. Grounds at the rear of the housing units.
3. Electrical transformer mounted near the top of the utility pole; the Portland Power Company is responsible for area transformers.
4. The sand-filter bed of the sewage treatment system.
5. Stagnant raw sewage on the top of another sand-filter bed; existing conditions at the sewage-treatment facility are to be corrected.

